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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/666,527	09/18/2003	Todd C. Bailey	21554-0004001/PA51-22-02	5895

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FISH & RICHARDSON P.C.  
P.O BOX 1022  
Minneapolis, MN 55440-1022

EXAMINER
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LUK, EMMANUEL S

ART UNIT	PAPER NUMBER
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1791

NOTIFICATION DATE	DELIVERY MODE
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12/11/2008

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

PATDOCTC@fr.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/666,527	<b>Applicant(s)</b> BAILEY ET AL.	
	<b>Examiner</b> Emmanuel S. Luk	<b>Art Unit</b> 1791	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 04 September 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |                                                                                      |                                                                   |
|--------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____                                                          | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 103***

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
2. Claims 1-8, 11-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Choi (2002/0093122) in view of Lof (2003/0224262).

Choi teaches imprint lithography that utilizes overlay marks [0172] for aid in alignment of the molds. The overlay marks are on the template and can be seen by the overlay measurement tool [0173]. In regards to claims 2-5 and 13-14, it is known in the art that the mark can be made of a metal such as chromium [0171] and also to have similar or different index of refractions between the material and the marks. The different material of the mark from the template would result in different index of refractions between the material of the template and the mark. Choi also teaches a surface treatment for desirable release characteristics [0115].

Choi fails to teach marks that are embedded within a substrate.

Lof teaches an alignment mark in lithography (see paragraph [0004]) that can be placed on a side of substrate, but also includes the alignment mark having subsequent material deposited on top such that it is embedded and no longer exposed at the surface (see paragraph 33 on page 4). Lof teaches the concept that the alignment mark can be embedded (see calibration substrate HW) and still be used for calibrating the machine. The alignment mark is no longer necessarily exposed at the surface (Col. 6, lines 40-41).

Lof teaches the use of an alignment mark for the mold and one skilled in the art would recognize the use of alignment of templates in photolithography apparatus to be also used in alignment of templates for imprint lithography due to the similarities of the usage of templates and substrates and also for the use of polarized illumination sources.

It would have been obvious for one of ordinary skill in the art to modify Choi with the alignment marks as taught by Lof because of the emphasis of calibration of the devices which would be an advantage in an imprint lithography device that is also sensitive to alignment.

3. Claims 9, 10, 17, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Choi in view of Lof (2003/0224262) as applied to claims 1-8, 11-16 above, and further in view of Chou (6309580) or Jeans (2004/0219246).

Choi in view of Lof fail to teach a fluorocarbon release material.

Chou teaches a nanoimprint device having a fluorocarbon release material layer (Col. 12, lines 1-12) on the mold (10). Choi already teaches a surface treatment for release of the material. In addition, Jeans teaches the use of fluorocarbons as a release layer. "Suitable materials for the release layer 13 include but are not limited to a fluorocarbon material. As an example, the fluorocarbon material for the release layer 13 can be deposited using a plasma deposition of a trifluoromethane ( $\text{CHF}_3$ ) gas for about 5.0 minutes." [0086]

It would have been obvious for one of ordinary skill in the art to modify Choi in view of Lof with the addition of a release layer as taught by Chou, or Jeans, because it allows for easier removal of the product from the mold surface.

4. Claims 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Choi (2002/0093122) in view of Lof (2003/0224262) and Kobayashi.

Choi teaches imprint lithography that utilizes overlay marks [0172] for aid in alignment of the molds. The overlay marks are on the template and can be seen by the overlay measurement tool [0173]. It is known in the art that the mark can be made of a metal such as chromium [0171] and it is also known in the art to have similar or different index of refractions between the material and the marks when the material of the template is different from the mark. Choi also teaches a surface treatment for desirable release characteristics [0115].

Choi fails a method of fabricating marks that are embedded within a substrate.

Lof teaches an alignment mark in lithography (see paragraph [0004]) that can be placed on a side of substrate, but also includes the alignment mark having subsequent material deposited on top such that it is embedded and no longer exposed at the surface (see paragraph 33 on page 4). Lof teaches the concept that the alignment mark can be embedded (see calibration substrate HW) and still be used for calibrating the machine. The alignment mark is no longer necessarily exposed at the surface (Col. 6, lines 40-41). Lof teaches the use of an alignment mark for the mold and one skilled in the art would recognize the use of alignment of templates in photolithography apparatus

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to be also used in alignment of templates for imprint lithography due to the similarities of the usage of templates and substrates and also for the use of polarized illumination sources.

Kobayashi teaches the methods of creating a film on a substrate, etching, using a mask, and embedding the film with further material (see Abstract).

It would have been obvious for one of ordinary skill in the art to modify Choi with the alignment marks as taught by Lof because of the emphasis of calibration of the devices which would be an advantage in an imprint lithography device that is also sensitive to alignment and utilizing the method taught by Kobayashi in creating the substrate and alignment mark of Lof since it is a well known method of creating an embedded material in a substrate as shown by Kobayashi.

### ***Response to Arguments***

5. Applicant's arguments in the previous appeal brief and supplemental appeal brief with respect to claims, it has been determined that the Lof reference should have been used in an obviousness rejection. A new rejection has been used with the Choi reference in view of Lof concerning alignment marks embedded in bulk material of the template.

### ***Conclusion***

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Maeda (5876884) and Kosuga (6156243).

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Emmanuel S. Luk whose telephone number is (571)272-1134. The examiner can normally be reached on Monday-Fridays from 9 to 5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Yogendra N. Gupta can be reached on (571) 272-1316. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

EL

/James Mackey/  
Primary Examiner, Art Unit 1791